Chapter 10 Isuzu

This chapter contains information for testing Isuzu vehicles with the Asian Import Vehicle Communication Software (VCS). The following Isuzu systems may be available for testing:

- Engine
- Transmission
- Antilock Brake System (ABS)
- Supplemental Restraint System (SRS)
- Transfer Case
- Body Control Module (BCM)

10.1 Testing Engine and Transmission Systems

Isuzu engine and transmission system testing includes:

- “Engine And Transmission Code Reading Connectors and Locations” on page 97
- “Manual Code reading (Engine)” on page 103
- “Hard Codes and Soft Codes” on page 104
- “Clearing Codes” on page 104
- “Road Test (No C&D)” on page 105
- “Field Service Functional Tests” on page 105

10.1.1 Engine And Transmission Code Reading Connectors and Locations

Figure 10-1 and Table 10-1 on page 98 show common engine diagnostic connector locations for Isuzu vehicles. Figure 10-2 and Table 10-2 on page 99 show common transmission diagnostic connector locations.

The following engine and transmission code reading procedures are included:

- “To read codes from 1986–87 Trooper:” on page 99
- “To read codes from 1984–95 Pickup 1988–95 Amigo, and 1991–95 Rodeo:” on page 101
- “To read codes from vehicles with a 12-pin connector:” on page 102
- “To read codes from 1988–89 Impulse:” on page 102
- “To read codes from 1985½–89 I-Mark and 1990 and later Impulse:” on page 103
- “To read codes from 1988–89 Impulse (optional):” on page 103
- “To read codes from 1985½–89 I-Mark and 1990 and later Impulse (optional):” on page 103

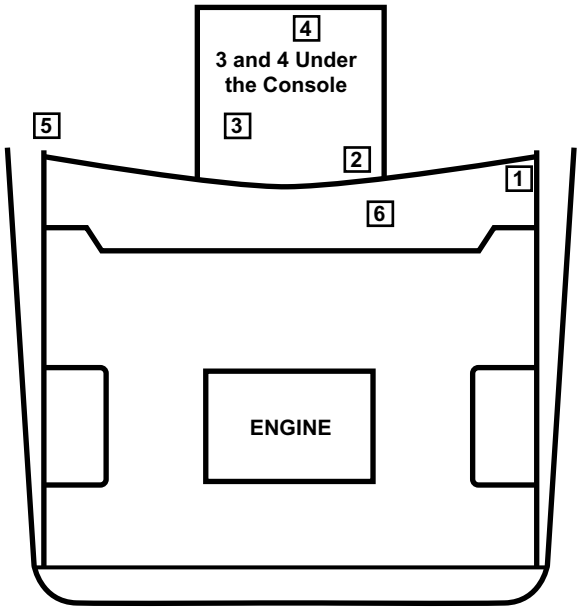

Figure 10-1 *Isuzu common engine connector location*

Table 10-1 *Common engine connector locations*

VEHICLE	YEAR	CONNECTOR LOCATION
Amigo	1990–94	1 (ECM)
Ascender	2003–04	1
Axiom	2002–04	1
I-Mark	1984–89	5
Impulse	1984–89	5
	1990–92	1 (ECM)
Pickup	1990–95	1 (ECM)
Rodeo	1990–95	1 (ECM)
	1996–2004	1
Stylus	1990–93	1 (ECM)
Trooper	1990–91	1 (ECM)
	1992–94	6 (ECM)
	1996–2002	1
Trooper 2.3L	1986–87	2
Trooper 2.6L	1988–91	4
Trooper 2.8L	1989–91	3
Vehicross	1999–2001	1

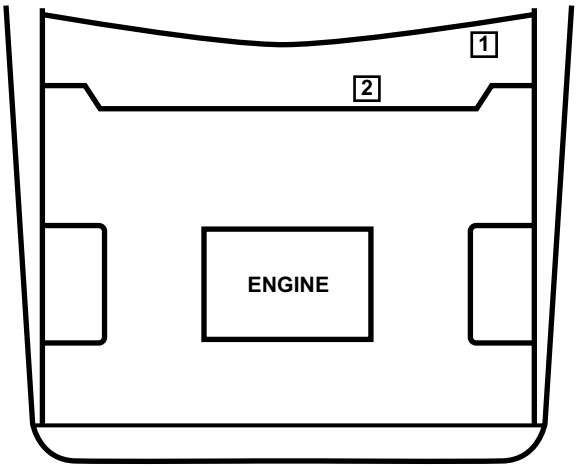

Figure 10-2 *Common transmission connector locations*

Table 10-2 *Common transmission connector locations*

VEHICLE	YEAR	CONNECTOR LOCATION
Amigo	1990–94	1
Impulse	1990–92	1
Pickup	1990–95	1
Rodeo	1990–95	1
Stylus	1990–93	1
Trooper	1990–91	1
	1992–94	2

NOTE:
The 1984–85 Trooper connector is hard to find (Figure 10-3).

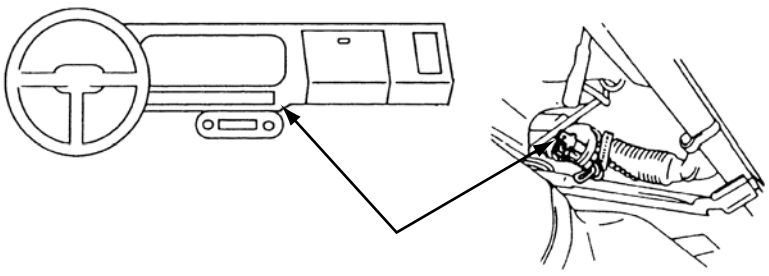

Figure 10-3 *1984–1985 Isuzu Trooper diagnostic connector*

To read codes from 1986–87 Trooper:

- Connect the MULTI-1 adapter to the ALDL or diagnostic connector (Figure 10-4 on page 100).

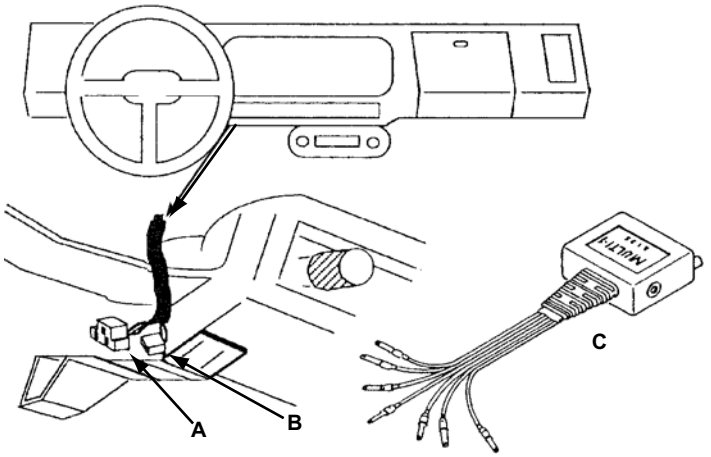

Figure 10-4 *1986–87 Trooper connectors and adapter*

A—ALDL connector

B—Diagnostic connector

C—MULTI-1 adapter

Diagnostic connector locations for the 1988–91 Trooper are shown in Figure 10-5.

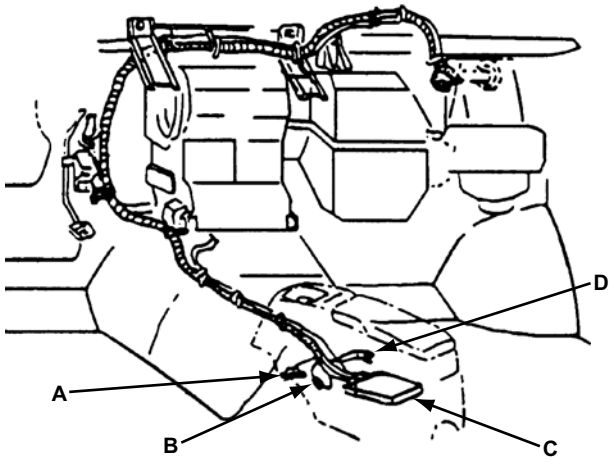

Figure 10-5 *1988–91 Trooper connectors*

A—ALDL connector

B—Distributor set timing connector

C—ECM

D—Diagnostic lead terminal

Diagnostic connector locations for the 1984–95 Pickup, 1988–95 Amigo, and 1991–95 Rodeo are shown in Figure 10-6 on page 101.

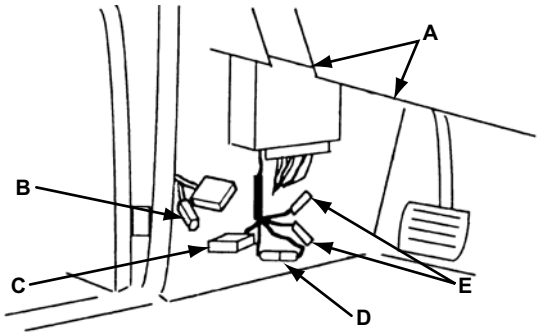

Figure 10-6 *1984–95 Pickup, 1988–95 Amigo, and 1991–95 Rodeo connectors*

A—1984–87 Impulse (leads and ALDL not shown)

B—RWAL 1-pin connector

C—ALDL (3-pin connector)

D—Timing set connector

E—Diagnostic leads (connect together for flash codes)

To read codes from 1984–95 Pickup 1988–95 Amigo, and 1991–95 Rodeo:

- Connect the MULTI-1 adapter with the white terminal converters (Figure 10-7 and Figure 10-8).

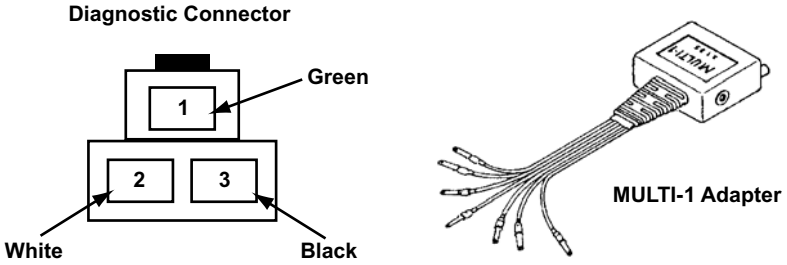

Figure 10-7 *1984–95 Pickup 1988–95 Amigo, and 1991–95 Rodeo connector and adapter*

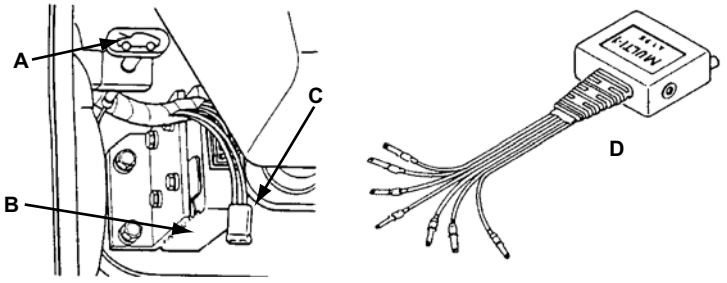

Figure 10-8 *1988–91 Trooper with automatic transmission connector location*

A—Hood release

B—ECM

C—Diagnostic connector

D—MULTI-1 adapter

To read codes from vehicles with a 12-pin connector:

- Connect the MULTI-1 adapter to the connector (Figure 10-9) or use the GM-1 adapter.

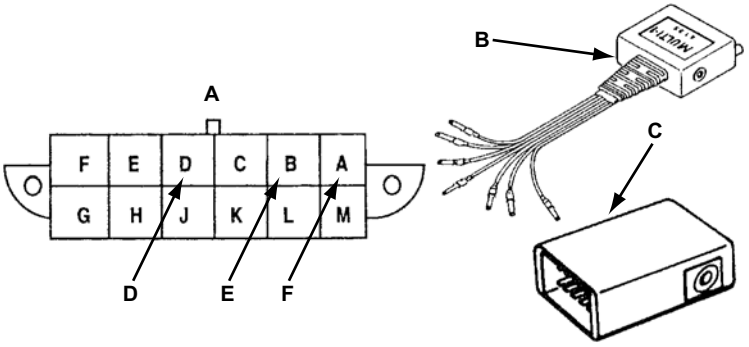

Figure 10-9 *12-pin connector and adapters*

A—Diagnostic connector
B—MULTI-1 adapter
C—GM-1 adapter
D—Green
E—White
F—Black

To read codes from 1988–89 Impulse:

- Connect the MULTI-1 adapter with the white terminal converters (Figure 10-10).

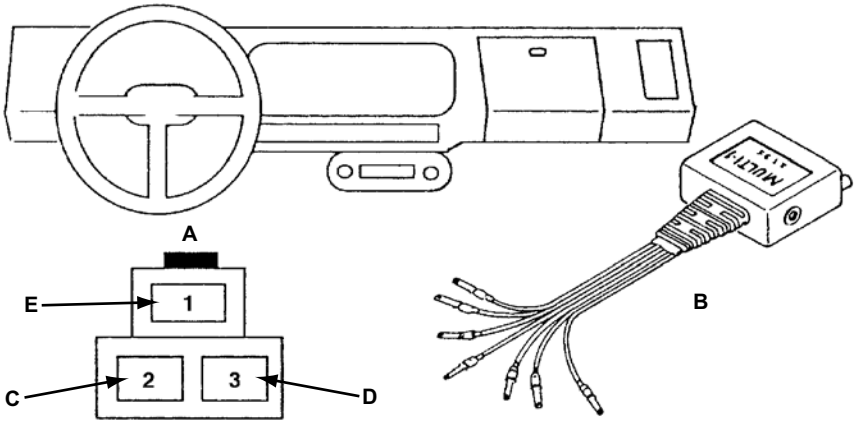

Figure 10-10 *1988–89 Impulse connector and adapter*

A—Diagnostic connector
B—MULTI-1 adapter
C—White
D—Green
E—Black

To read codes from 1985½–89 I-Mark and 1990 and later Impulse:

- Connect the MULTI-2-D adapter to the white 3-pin connector (Figure 10-11 on page 103).

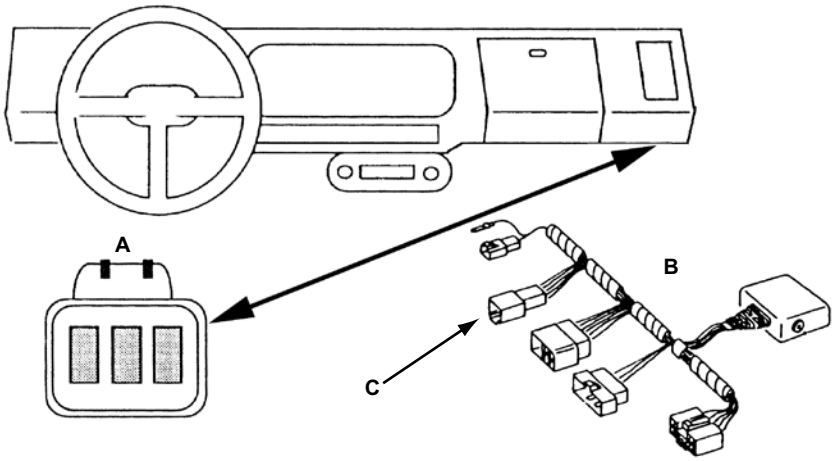

Figure 10-11 *1985½–89 I-Mark, 1990 and later Impulse connector and adapter*

A—Diagnostic connector
B—MULTI-2 adapter
C—MULTI-2-D

10.1.2 Manual Code reading (Engine)

Use one of the following procedures to manually read codes on I-mark and Impulse models. Isuzu engine and transmission systems flash Type 05 codes, refer to Figure 10-14 and Table 10-3 on page 104 for Type 05 code information.

To read codes from 1988–89 Impulse (optional):

- Jump pins 2 and 3 as shown in Figure 10-12.

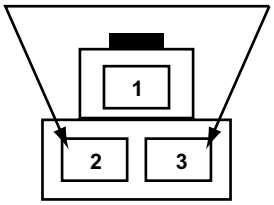

Figure 10-12 *1988–89 Impulse jump pins*

To read codes from 1985½–89 I-Mark and 1990 and later Impulse (optional):

- Jump pins as shown in Figure 10-13.

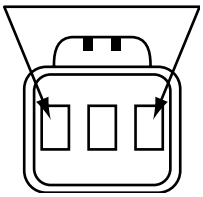

Figure 10-13 *1985½–89 I-Mark, 1990 and later Impulse jump wire*

Code Type 05

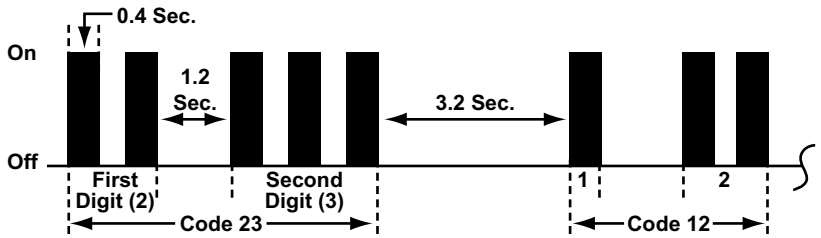

Figure 10-14 *Isuzu engine Code Type 05*

Table 10-3 *Engine Code Type 05*

Pattern:	10s and 1s
Read codes on:	CHECK ENGINE lamp
Start codes by:	Connect two diagnostic connector terminals or jumper two terminals in a connector and turn the ignition on.
When done:	Turn the ignition off, disconnect the connectors, and clear codes.
Code 12 always appears first. Each code repeats three times, including code 12. Code display cycle repeats as long as system is in diagnostic state.	

10.1.3 Hard Codes and Soft Codes

Some models separate hard codes from soft (“historical”) codes (Figure 10-15).

```
   RPM_1234 O2(mV)___689 MC DWL(°)__38
 **  DIAGNOSTIC MODE.  DO NOT DRIVE.  **
13 O2 SENSOR NOT WARM ENOUGH
HC HISTORICAL CODES FOLLOW
```

Figure 10-15 *Data display with historical codes*

10.1.4 Clearing Codes

Some 1987 and later models allow clearing trouble codes from the Exit menu (Figure 10-16).

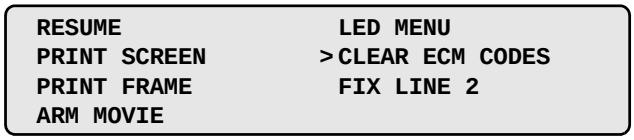

Figure 10-16 *CLEAR ECM CODES*

If the code-clearing operation fails for any reason, the previous codes will reappear at the top of the data list when you return to CODES & DATA. If this happens, repeat code clearing.

10.1.5 Road Test (No C&D)

Many Isuzu models offer a ROAD TEST (NO C&D) mode. This option removes the scan tool resistive load applied to the vehicle ECM in CODES & DATA, so you can safely drive the vehicle with the scan tool connected.

NOTE:
No codes or data are transmitted when operating in this mode.

Some Isuzu vehicles, particularly with carbureted engines, provide a ROAD TEST mode of ECM operation but do not transmit data. For these vehicles, a ROAD TEST (NO C&D) selection is available (Figure 10-17).

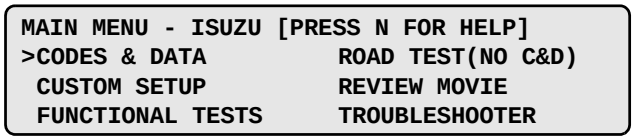

Figure 10-17 *ROAD TEST (NO C&D) selection*

10.1.6 Field Service Functional Tests

NOTE:
Operations described in this section are not available on all tool platforms.

The Field Service functional test is available for some 1980½ –95 Isuzu models with General Motors control systems.

Selecting FIELD SERVICE displays a screen like Figure 10-18.

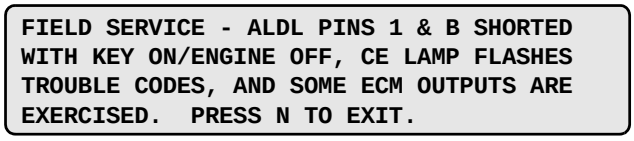
FIELD SERVICE - ALDL PINS 1 & B SHORTED
WITH KEY ON/ENGINE OFF, CE LAMP FLASHES
TROUBLE CODES, AND SOME ECM OUTPUTS ARE
EXERCISED. PRESS N TO EXIT.

Figure 10-18 *Sample Field Service*

IMPORTANT:
Do not enter Field Service mode while driving a vehicle on a road test. ECM changes to ignition timing, fuel delivery, and other engine functions may affect engine operation and vehicle control.

In Field Service mode, the scan tool grounds the diagnostic pin B in the ALDL connector. The ECM does not transmit data in this mode, and new trouble codes cannot be set. On some models, FIELD SERVICE can be selected to check or adjust ignition timing or the idle minimum air rate.

With the key on and the engine off, the instrument panel CHECK ENGINE lamp flashes stored trouble codes if any are present or code 12 if no codes are present. The ECM also energizes all solenoids, so you can use Field Service mode to test solenoid operation.

Field Service mode works differently depending on the engine:

- With a carbureted engine running, the CHECK ENGINE LAMP stops flashing code 12 and new trouble codes cannot be set. The ECM also sets ignition timing to a fixed degree of advance, which lets you check and adjust timing for some models. You also can use the Field Service mode for a system performance check on a carbureted engine. Refer to a vehicle service manual for details.
- For some fuel-injected engines, the instrument panel CHECK ENGINE lamp flashes rapidly when the engine is running in open loop and slowly when in closed loop. Additionally, in closed loop, the length of the lamp flash indicates whether the exhaust is rich or lean. The lamp flash is longer if the exhaust is rich.

10.2 Testing Antilock Brake System (ABS)

Isuzu ABS testing includes:

- “ABS Code Reading Connectors and Locations” on page 106
- “Manual Code Reading (ABS)” on page 108
- “Clearing ABS Codes” on page 111

10.2.1 ABS Code Reading Connectors and Locations

Refer to Figure 10-19 and Table 10-4 for common Isuzu ABS diagnostic connector locations.

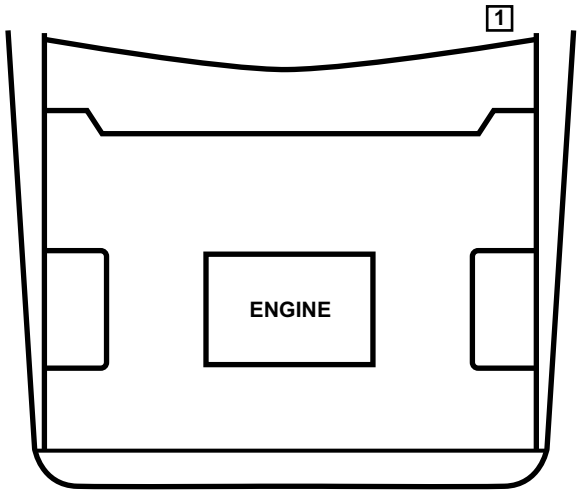

Figure 10-19 *Isuzu common ABS connector locations*

Table 10-4 *Common ABS connector location*

VEHICLE	YEAR	CONNECTOR LOCATION
Amigo	1990–94	1
Impulse	1990–92	1
Pickup	1990–95	1
Rodeo	1990–95	1
Stylus	1990–93	1

To read ABS codes from 2003–04 Ascender:

- Connect the OBD-II adapter to the 16-pin connector (Figure 10-20).

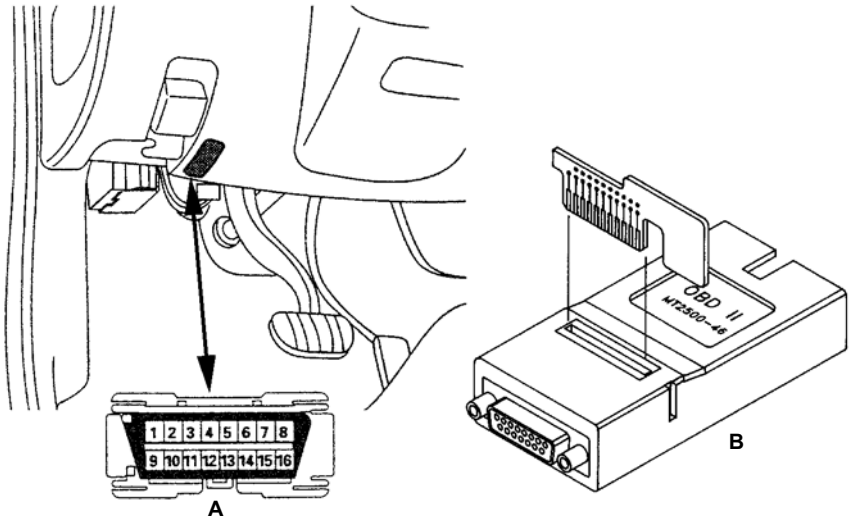

Figure 10-20 *2003–04 Ascender ABS connector*

A—16-pin DLC

B—OBD-II adapter

10.2.2 Manual Code Reading (ABS)

There are 3 types of manual ABS codes for Isuzu vehicles:

- Rear wheel antilock (RWAL), see Figure 10-22 and Table 10-5 on page 108
- Type 02, see Figure 10-24 and Table 10-6 on page 109
- Type 05a, see Figure 10-26 and Table 10-7 on page 110

RWAL ABS Code Type

The RWAL diagnostic connector location is shown in (Figure 10-21).

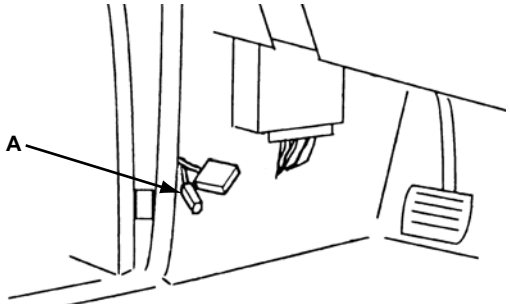

Figure 10-21 *1991–95 Rodeo, 1990–95 Pickup, and 1992–94 Amigo1-pin RWAL diagnostic connector*

A— RWAL 1-pin connector

Straight Count—Flashes the lamp or LED the number of times equal to the trouble code with a noticeable pause between multiple codes. The first flash may be long or short depending on when diagnostics were entered. Include long or short first flash as part of count. For example: a long first flash and seven equal flashes or eight equal flashes is code 8.

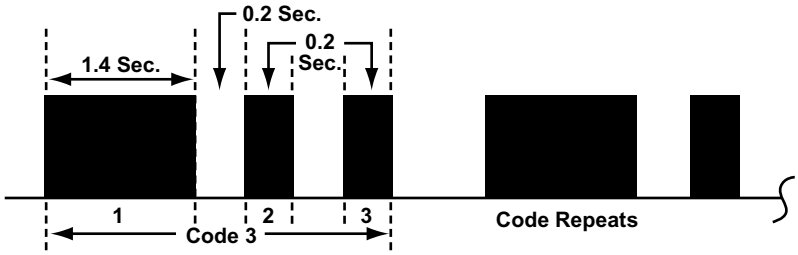

Figure 10-22 *Isuzu RWAL ABS Code Type*

Table 10-5 *Isuzu RWAL ABS Code Type*

Pattern:	Straight Count
Read codes on:	Rr Antilock or ABS indicator lamp
Start codes by:	With ignition switch on and indicator illuminated, jumper ABS diagnostic connector terminal to ground. First flash may be long or short. Include the long or short first flash as part of code number count. (Figure 10-21)
Clear codes by:	Codes are cleared every time the ignition key is turned off.
When done:	Disconnect jumper & turn ignition off.
Only the first fault that occurred during the current ignition cycle will set a code. Vehicle may need to be driven to cause some codes to set & turn on the indicator.	

Code Type 02

The diagnostic connector and warning lamp locations are shown in (Figure 10-23).

Long/Short—Indicator flashes a 2-digit trouble code with the 10s digit pulses staying on longer than the 1s digit pulses.

For example: LONG-LONG-pause- SHORT-SHORT-SHORT is code 23.

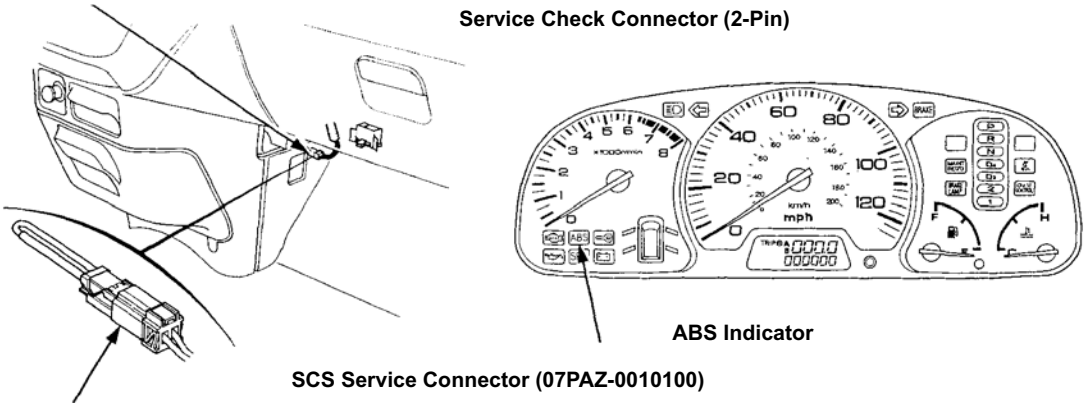

Figure 10-23 *1996-1999 Isuzu Oasis ABS service check connector location*

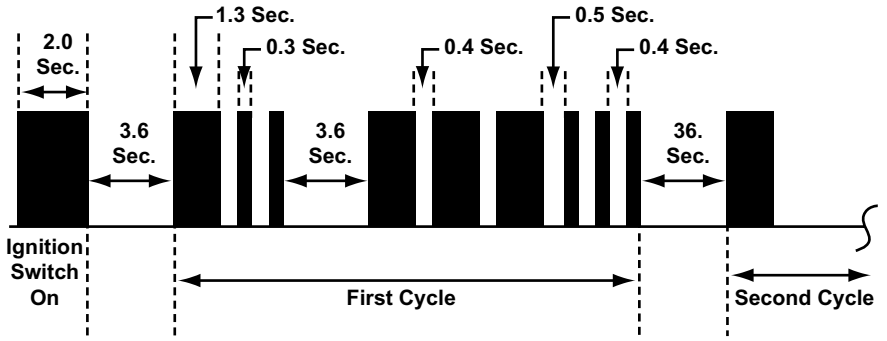

Figure 10-24 *Isuzu ABS Code Type 02*

Table 10-6 *Isuzu ABS Code Type 02*

Pattern:	Long/Short (Main code/sub-code)
Read codes on:	ABS indicator lamp
Start codes by:	With ignition switch off, connect SCS service connector (OEM#07PAZ-0010100) or jumper wire to 2-pin ABS service connector. Turn ignition switch on without the brake pedal depressed. Depressing brake pedal will initiate DTC erasure mode.
Clear codes by:	Follow the procedure in the “Clearing ABS Codes” section of this manual. Procedure includes connecting the SCS service connector or jumper wire to the 2-pin ABS service check connector, pressing & releasing the brake pedal several times while monitoring the ABS indicator lamp.
When done:	Turn the ignition off and disconnect the SCS service connector or jumper wire.

Code Type 05a

To read ABS codes from 2002–04 Axiom, 1996–2002 Trooper, 1999–2001 Rodeo and 1999–2001 Vehicross:

- Jump pins 4 and 12 as shown in Figure 10-25.

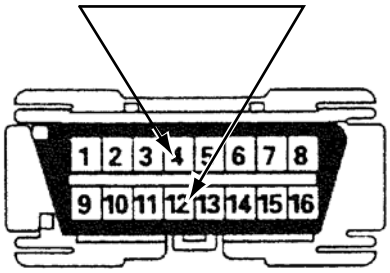

Figure 10-25 *16-pin connector jump wire*

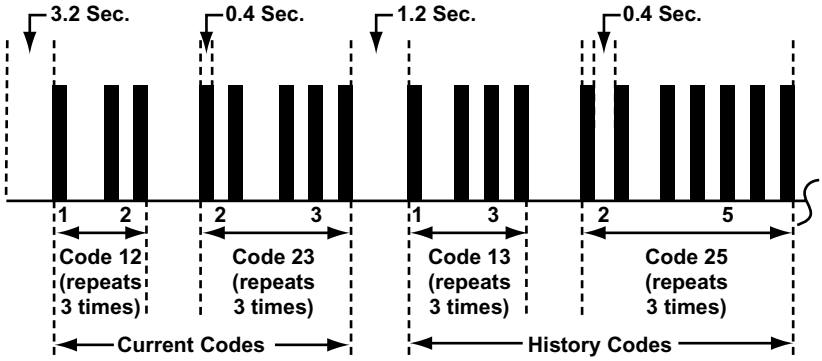

Figure 10-26 *Isuzu ABS CodeType 05a*

Table 10-7 *Isuzu ABS Code Type 05a*

Pattern:	10s and 1s
Read codes on:	ABS warning lamp
Start codes by:	After bringing the vehicle to a complete stop, and making sure the brake pedal is not depressed, turn the ignition switch to the off position. Connect terminals 12 and 4 on the OBD-II 16-pin diagnostic link connector (Figure 10-20). Turn the ignition switch to the on position.
Clear codes by:	Within three seconds after entering the diagnostic mode, pulsate the brake switch on and off at least six times.
When done:	Turn the ignition off, disconnect the connectors, and clear codes.
All codes repeat 3 times and are followed by a 1.2 second pause. Code 12 always flashes first to confirm the system is in the diagnostic mode. Any current codes follow code 12. After the current codes have flashed, code 13 may flash. Code 13 indicates the presence of history codes which then follow. If only historical codes are present, the diagnostic sequence first flashes code 12, then code 13, followed by the historical codes. The code display cycle repeats as long as the system is in the diagnostic state.	

10.2.3 Clearing ABS Codes

Use this procedure to clear ABS codes on the 1996–99 Isuzu Oasis.

The following conditions must be met before DTC erasure mode will complete:

- The SCS check connector or jumper wire must be connected to the 2 pin service connector before the ignition switch is turned on. See Figure 10-23 on page 109 for connector location.
- The brake pedal must be depressed before the ignition switch is turned on.
- Vehicle speed must be 6 mph (10kph) or less.

To clear ABS codes:

1. Connect the SCS service connector to the 2-pin service connector located under the glove box. (See Figure 10-23 on page 109)
2. Depress the brake pedal.
3. Turn the ignition switch On while keeping the brake depressed.
4. After the indicator comes on, depress the brake pedal again.
5. After the indicator goes off, release the brake pedal again.
6. After a few second, the ABS indicator blinks twice and the DTC is erased. If the indicator does not blink twice, repeat steps 1 through 6. if the indicator stays on after the indicator blinks twice, check the DTC because a problem was detected during the initial diagnosis before shifting to DTC erasure mode.
7. Turn the ignition switch off and remove the SCS service connector.

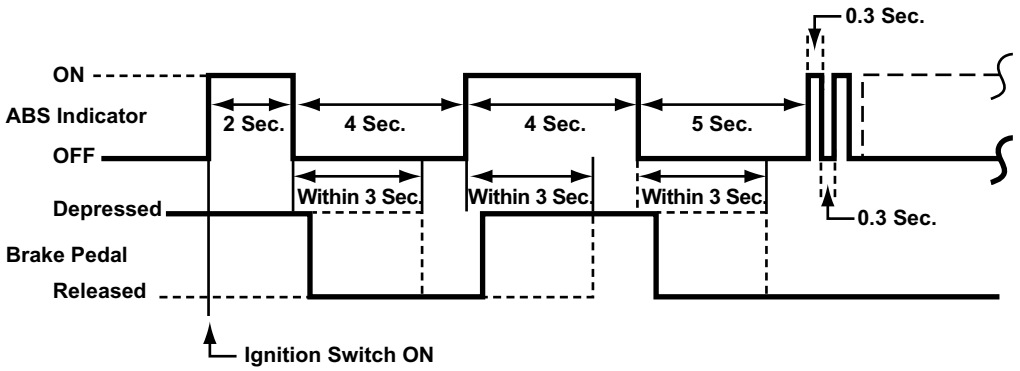

Figure 10-27 *1996–99 Isuzu Oasis ABS DTC erasure mode*

10.3 Testing Supplemental Restraint Systems (SRS)

Isuzu SRS, or airbag testing includes:

- “Manual Code Reading (SRS)” on page 112
- “Clearing SRS Codes” on page 115

10.3.1 Manual Code Reading (SRS)

Isuzu models use 2 types of SRS codes:

- Type 02a, see Figure 10-29, Figure 10-30 and Figure 10-31 and Table 10-8 on page 113
- Type 03, see Figure 10-32 Figure 10-33, and Figure 10-34 and Table 10-9 on page 115

Code Type 02a

Long/Short - Flashes a 2 digit trouble code with the 10s digit pulses staying on longer than the 1s digit pulses.

For example: LONG-LONG pause SHORT-SHORT-SHORT is Code 23.

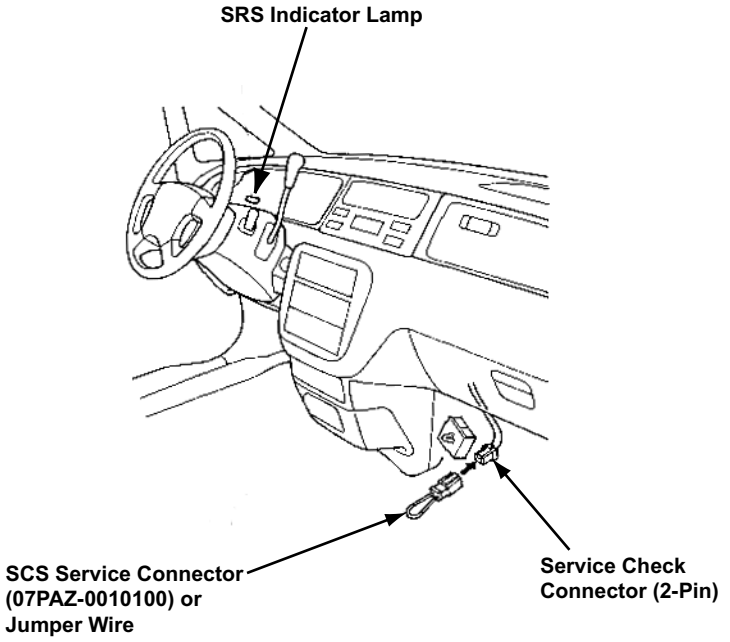

Figure 10-28 *Isuzu 1996–99 Oasis 2-pin service check connector location*

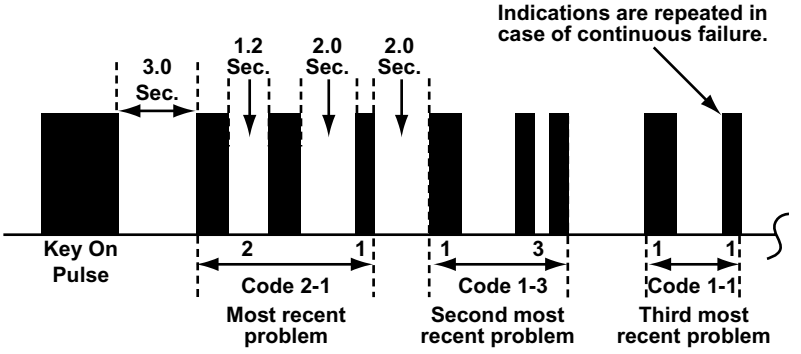

Figure 10-29 *Isuzu SRS Code Type 02a: Continuous Failure, SRS indicator flashes like this*

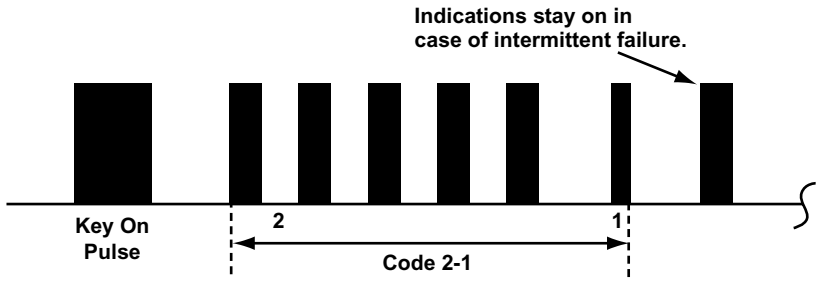

Figure 10-30 *Isuzu SRS Code Type 02a: Intermittent Failure, SRS indicator flashes like this*

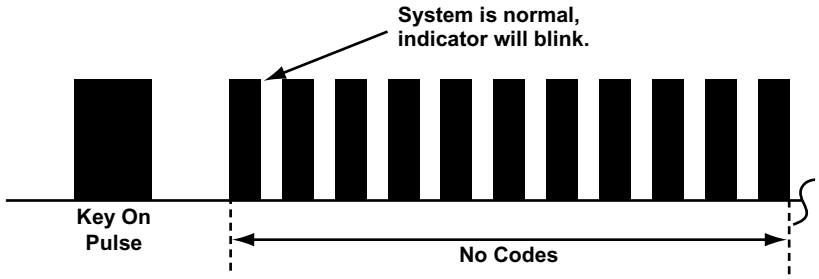

Figure 10-31 *Isuzu SRS Code Type 02a: Normal (no failure), SRS indicator flashes like this*

Table 10-8 *Isuzu SRS Code Type 02a*

Pattern:	Long/Short (Main code/sub-code)
Read codes on:	SRS indicator lamp
Start codes by:	With ignition switch off, connect SCS service connector (OEM# 07PAZ-0010100) or jumper wire to the 2-pin service check connector. Turn ignition switch on.
Clear codes by:	Following the procedure in the “Clearing SRS Codes” section of this manual. Procedure includes connecting and disconnecting the SCS service connector or jumper wire to the MES (Memory Erase Signal) connector several times while monitoring the SRS indicator flashes.
When done:	Switch the ignition off and wait two to three seconds. Turn the ignition switch on again. The SRS indicator light should come on and go out after about six seconds. Continue to monitor the SRS indicator and confirm that it does not come on again for another 30 seconds. Turn ignition switch off.

Turn the ignition switch on. The SRS indicator light comes on for about six to thirty seconds and goes off. Shortly after (the time depends on which DTC is confirmed by the self-diagnosis system), it will indicate the DTC.

- In case of continuous failure(s), the DTC(s) will be indicated repeatedly (see Figure 10-29).
- In case of intermittent failure(s), the SRS indicator light will indicate (each of) the DTC(s) one time, then it will stay on (see Figure 10-30).
- In case of both continuous and intermittent failures, the DTC of the continuous failure only will be indicated repeatedly. After troubleshooting it, first recheck to make sure that the problem has disappeared and that there are no other codes. Then, erase the codes from memory.
- In case the system is normal (no DTC), the SRS indicator light will start to blink (see Figure 10-31).

Code Type 03

Tens/Ones - Flashes a 2 digit trouble code with a noticeable pause between each digit. The first set of flashes is the 10s digit; the second set of flashes is the 1s digit.

For example: FLASH-FLASH pause FLASH-FLASH-FLASH is Code 23.

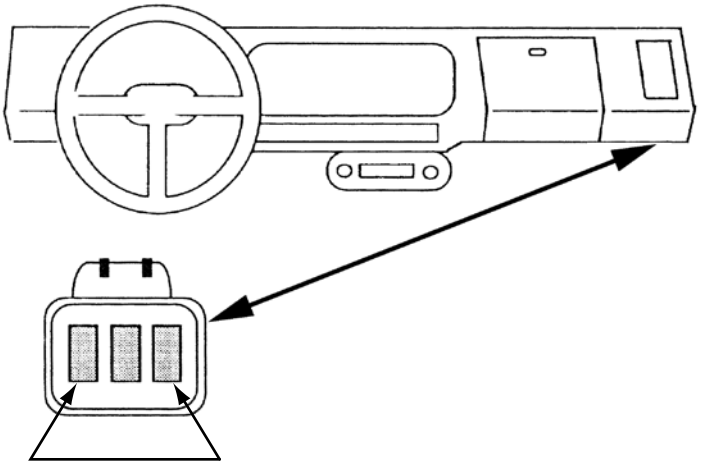

Figure 10-32 *Isuzu vehicles with orange SRS diagnostic connector and jumper pins*

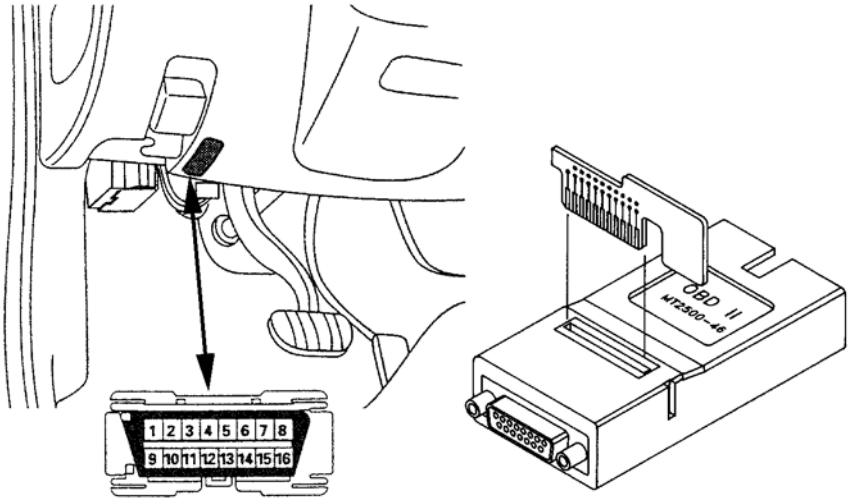

Figure 10-33 *1996 and newer Isuzu vehicles with 16-pin OBDII style connector location*

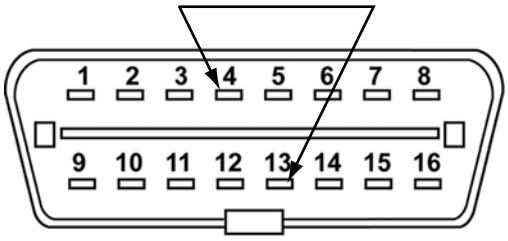

Figure 10-34 *1996 and newer Isuzu vehicles with 16-pin OBDII style connector and jumper wire*

Table 10-9 *Isuzu SRS Code Type 03*

Pattern:	10s and 1s
Read codes on:	INFL REST or SRS indicator lamp
Start codes by:	With ignition switch on, jumper two terminals in a diagnostic connector together. Only current codes will be flashed. (Figure 10-32, Figure 10-33)
Clear codes by:	Codes cannot be cleared manually on these vehicles. A factory scan tool must be used to clear SRS codes.
When done:	Disconnect jumper & turn ignition off.
Each code is displayed one time before moving on to the next code. After all of the codes have displayed, the entire code sequence will repeat until the jumper wire is removed from the diagnostic connector. Flash code 12 should always be the first code to flash, which indicates that flash code mode has been enabled. If there are no current or history codes, flash code 12 will be flashed until the jumper is removed from the diagnostic connector. Flash code 13 indicates that History codes are stored in memory. A factory scan tool is needed to read history codes.	

10.3.2 Clearing SRS Codes

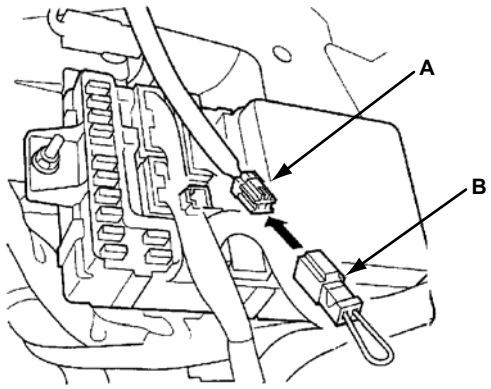

Figure 10-35 *1996–99 Oasis SRS code clearing (left side of dash)*

A—MES (Memory Erase Signal) connector

B—SCS service connector

To clear SRS Codes on 1996–99 Isuzu Oasis models:

1. Switch the ignition off and disconnect the SCS connector from the service check connector.
2. Connect the SCS service connector (part number 07PAZ-0010100) to the yellow 2-pin MES (Memory Erase Signal) connector. A common jumper wire can be used, as long as you maintain good contact between the terminals.
3. Switch the ignition on. The SRS indicator lamp lights and stays on for about 6 seconds and then goes off.
4. Within 4 seconds of the lamp switching off, remove the SCS service connector from the MES connector
5. When the SRS indicator lamp lights again, connect the SCS service connector to the MES connector within 4 seconds of the lamp switching on.
6. When the SRS indicator lamp shuts off, remove the SCS service connector from the MES connector within 4 seconds. The SRS lamp flashes twice to indicate memory has been erased.
7. Switch the ignition off and wait two to three seconds.
8. Turn the ignition switch on again. The SRS indicator light should come on and go out after about 6 seconds. Continue to monitor the SRS indicator and confirm that it does not come on again after 30 seconds.
9. Turn ignition switch off.

10.4 Testing Transfer Case and Body Control Module (BCM)

Figure 10-36 shows the diagnostic connector location for testing the transfer case and BCM.

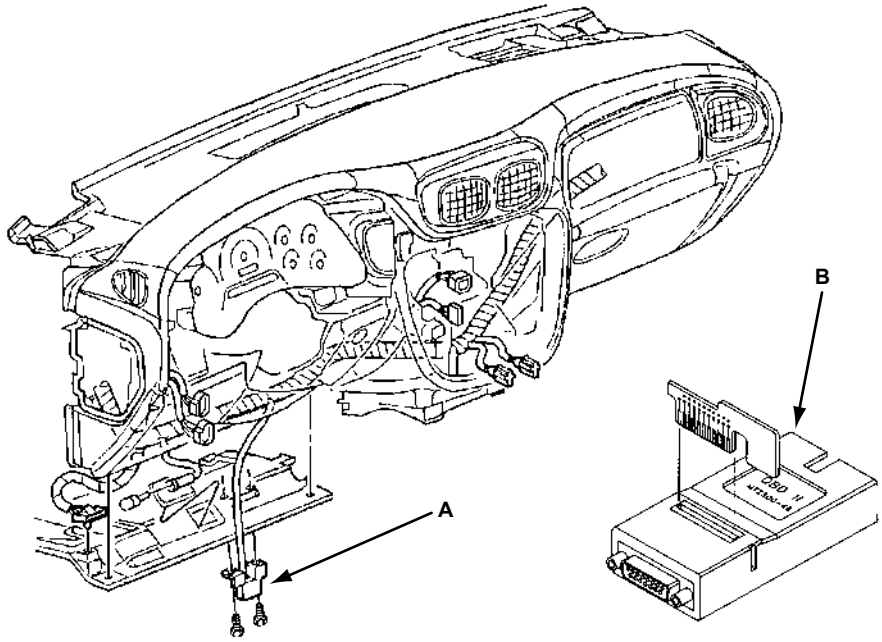

Figure 10-36 *2003–04 Isuzu Ascender 16pin DLC Connector for all systems*

A—16-pin DLC

B—OBD-II adapter